

# Series BDF

Large Displays for parallel BCD code



BDF-xx-BCD

Repeater for parallel BCD

*IDEAL SOLUTION to display numerical values at long distances, controlled by parallel BCD signal, in 4 and 6 digits format. Very strong housing and electrically protected units, designed for all type of industrial applications.*

# Model BCD

## Large displays for parallel BCD code

The BDF series of large displays for parallel BCD signal is available in 4 and 6 digits format with 57mm or 100mm digit height. Digits are 7 segments in red color (optional green led, ask for information).

The display value of each digit is controlled by BCD code. Several parallel lines control all digits (lines ABCD independent for each digit). Control to light the decimal point independent for each digit, control for «HOLD» function to block the refresh of each digit, and control for negative sign (polarity)

Function «BLANK» to switch-off all segments and function «TEST» to light all segments.

The mechanical of the BDF instruments is a very strong and sturdy aluminium housing anodized in black color, for panel mount, and for wall mount as an option. The front lens is antirreflexive and is firmly inserted on the aluminium profile with a rubber gasket around, providing IP65 protection on the front.

The signal wires are connected to plug-in screw clamps for higher security of the connections, accessible at the rear side of the instrument. The power is connected to a 3 terminal plug (2 power connections and 1 earth) containing an integrated protection fuse and an additional fuse as spare part.

### Order reference

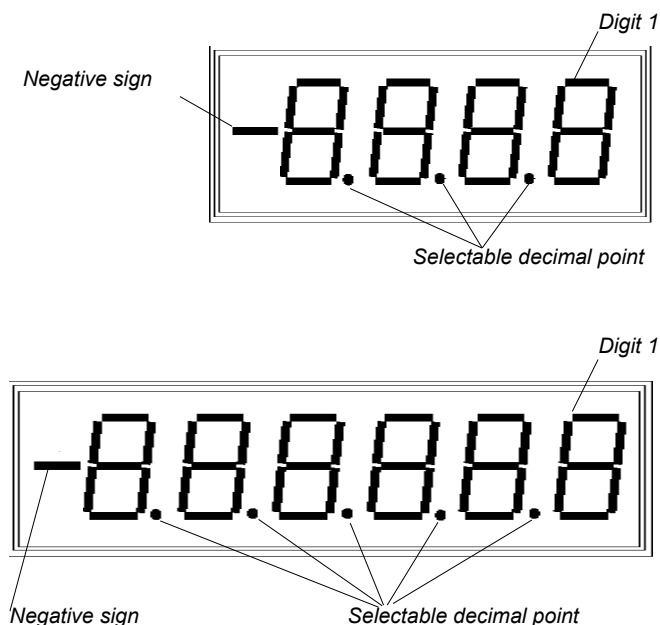
	Size	Model	Power	Color	Others
<b>BDF</b>	<b>24</b>	<b>BCD</b>	<b>0</b>	<b>R</b>	<b>---</b>
	-24 -44 -26 -46	-BCD	-0 (230 Vac) -1 (115 Vac) -6 (24 Vdc isolated)	-Red -Green (check for availability)	-65 (IP65)* -(empty)

\* the IP65 option uses a completely different type of housing from the indicated in this documentation. Check the BDF IP65 housing documentation for more information.

### Sizes

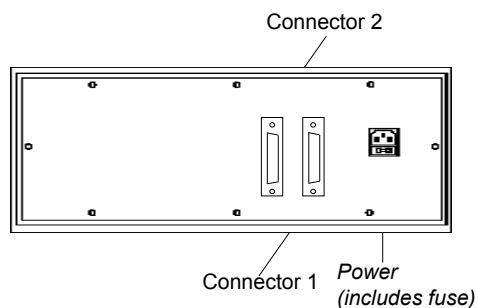
<b>SIZE BDF-24 -</b>	Instrument with 4 digits digit 57mm height (2,3")
<b>SIZE BDF-44 -</b>	Instrument with 4 digits digit 100 mm height (4,0")
<b>SIZE BDF-26 .-</b>	Instrument with 6 digits 57mm digit height
<b>SIZE BDF-46 .-</b>	Instrument with 6 digits 100mm digit height

## Front view



Instruments BDF for parallel BCD code are available in 4 or 6 digits format. Digits are led type 7 segments, with decimal point and negative sign.

## Rear view



## General specifications

DISPLAY	4 or 6 digits in red color 7 segment Led reading from -9999 to 9999 in 4 digits reading from -999999 to 999999 in 6 digits decimal point selectable digit 57 mm (2,3") in BDF-24 and BDF-26 digit 100 mm (4,0") in BDF-44 and BDF-46 antirreflexive front filter IP65 front protection
DATA	parallel BCD code
LOGIC	positive logical level «1» >4,3 Vdc (max. 40 Vdc) logical level «0» <1,1 Vdc.
HOLD	«HOLD» active in logical state «1». independent for each digit independent for the negative sign in level «0» reading updates continuously
TEST	active in logical state «0». lights all segments «-8.8.8.8.8.»
BLANK	active in logical state «0» lights-off all segments
NEGATIVE	negative sign active in logical state «0» with independent «HOLD» control
CONSUMPTION BY CHANNEL	4 mA at 24 Vdc 1,5 mA at 12 Vdc 150 µA at 5 Vdc
ENVIRONMENTAL DATA	Working Temp. 0/+50°C (32/122 °F) Storage Temp. -20/+85°C (-4/185°F) Rel. Humidity 0 to 85% non condensated
HOUSING	extruded aluminium anodized in black color for panel mount (optional wall mount)
POWER SUPPLY	standard 230 Vac 50/60 Hz (optional 115 Vac 50/60 Hz) (optional 24 Vdc isolated)
CONSUMPTION	6 VA in series BDF-24 and BDF-26 12 VA in series BDF-44 and BDF-46

## Signal connections

Signal connections at male SUB-D connector available at the rear of the instrument.

Each digit has 4 connection lines (ABCD) for its BCD code, 1 «Hold» line controlling the display update, and 1 control for the decimal point.

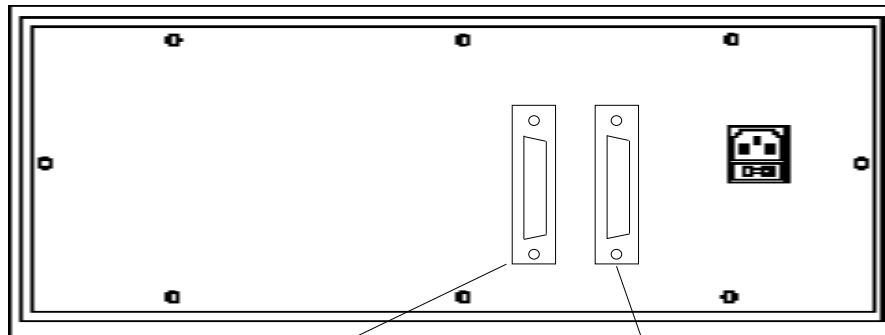
The negative sign has 1 control line and 1 line for «Hold».

Connection lines identified as «+5Vdc» can be used as fixed controls with logical state «1».

Connection lines identified with «GND» can be used as fixed controls with logical state «0».

The «Digit 1» is the Least Significant Digit.

Digit X				BCD Value	Display
D	C	B	A		
0	0	0	0	0	0
0	0	0	1	1	1
0	0	1	0	2	2
0	0	1	1	3	3
0	1	0	0	4	4
0	1	0	1	5	5
0	1	1	0	6	6
0	1	1	1	7	7
1	0	0	0	8	8
1	0	0	1	9	9
1	0	1	0	10	A
1	0	1	1	11	b
1	1	0	0	12	C
1	1	0	1	13	d
1	1	1	0	14	E
1	1	1	1	15	«BLANK»



Connector 2

Digit 3-A	13	25	Blank
Gnd	12	24	Test
Hold 2	11	23	Hold 4
Digit 2-D	10	22	Digit 4-D
Digit 2-C	9	21	Digit 4-C
Digit 2-B	8	20	Digit 4-B
Digit 2-A	7	19	Digit 4-A
Gnd	6	18	Gnd
Hold 1	5	17	Hold 3
Digit 1-D	4	16	Digit 3-D
Digit 1-C	3	15	Digit 3-C
Digit 1-B	2	14	Digit 3-B
Digit 1-A	1		

Connector 1

Gnd	13	25	Not connected
Not connected	12	24	+5 Vdc
Hold 6	11	23	+5 Vdc
Digit 6-D	10	22	Decimal 1 point
Digit 6-C	9	21	Decimal point 2
Digit 6-B	8	20	Decimal point 3
Digit 6-A	7	19	Decimal point 4
Gnd	6	18	Decimal point 5
Hold 5	5	17	Decimal point 6
Digit 5-D	4	16	GND
Digit 5-C	3	15	Hold Negative sign
Digit 5-B	2	14	Negative sign
Digit 5-A	1		

## Power supply connections

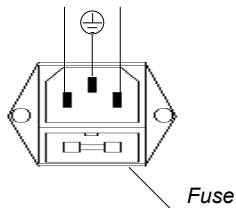
The power connector allows one terminal for earth and two power terminals. Internal fuse is integrated on the connector and an additional fuse is available as a spare part. The value of the fuses depends on the power supply, and is according to rule IEC127/2

230 Vac - 200 mA fuse time-lag

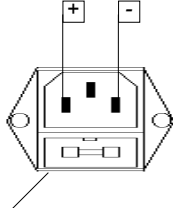
115 Vac - 400 mA fuse time-lag

24 Vdc - 350 mA fuse fast

*Powered*  
230 Vac (115 Vac optional)



*Powered*  
24 Vdc Isolated



SECTION BLANK

## Mechanical dimensions

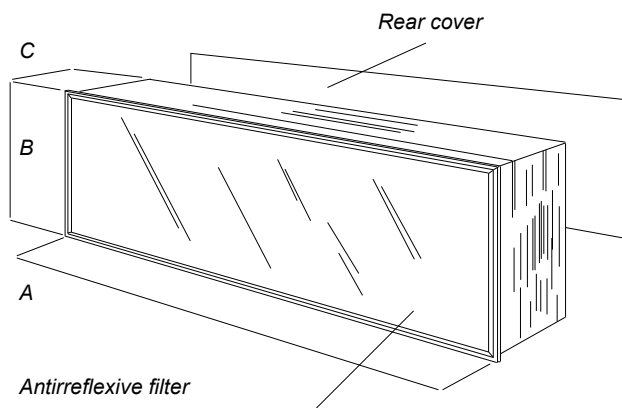
Size 24	A	B	C
4 digits 57mm (2")	264mm (10,40")	120mm (4,75")	112mm (4,41")

Size 44	A	B	C
4 digits 100mm (4")	480mm (18,90")	180mm (7,09")	112mm (4,41")

Size 26	A	B	C
6 digits 57mm (2")	384mm (15,12")	120mm (4,75")	112mm (4,41")

Size 46	A	B	C
6 digits 100mm (4")	668mm (27,10")	180mm (7,09")	112mm (4,41")

**Note** :- add 27mm to the «C» dimension for the power supply plug



## Panel cut-out and weights

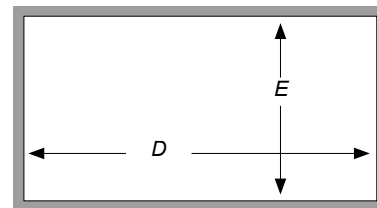
Size 24	D	E	weight
4 digits 57mm (2")	256mm (10,07")	112mm (4,40")	2.3 Kg (5 lbs)

Size 44	D	E	weight
4 digits 100mm (4")	472mm (18,58")	172mm (6,77")	5.0 Kg (11 lbs)

Size 26	D	E	weight
6 digits 57mm (2")	376mm (14,80")	112mm (4,40")	2.7 Kg (6 lbs)

Size 46	D	E	weight
6 digits 100mm (4")	680mm (36,77")	172mm (6,77")	5.7 Kg (12,5 lbs)

PANEL CUT-OUT

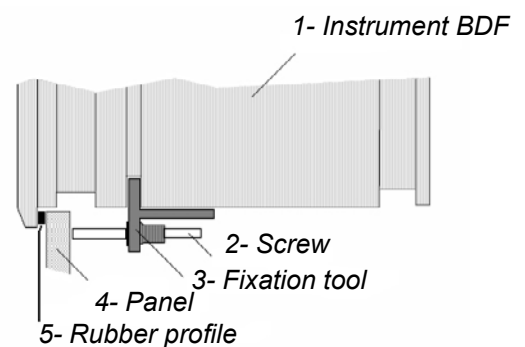


Panel width  
Max. 14 mm (0,55")  
Min. 2,5 mm (0,10")

## Panel installation

Introduce instrument «1» into the panel cut-out and place the fixation piece «3» on each side. Place screw «2» through fixation piece «3» until it presses the panel «4» and is firmly fixed.

**Note** - The front of the instrument is sealed IP65. To have the same level of protection between the panel and the instrument, place a rubber profile (squared or round) as indicated «5».



## Warranty

All instruments are warranted against all manufacturing defects for a period of 24 MONTHS from the shipment date. This warranty does not apply in case of misuse, accident or manipulation by non-authorized personnel. In case of malfunction get in contact with your local provider to arrange for repair. Within the warranty period and after examination by the manufacturer, the unit will be repaired or substituted when found to be defective. The scope of this warranty is limited to the repair cost of the instrument, not being the manufacturer eligible for responsibility on additional damages or costs.

## CE Declaration of conformity

Manufacturer FEMA ELECTRÓNICA, S.A.  
Altimira 14 - Pol. Ind. Santiga  
E08210 - Barberà del Vallès  
BARCELONA - SPAIN  
www.fema.es - info@fema.es

Series- BDF-24 y BDF-44  
Models BCD

The manufacturer declares that the instruments indicated comply with the directives and rules indicated below.

Directive of electromagnetic compatibility 2004/108/CEE  
Directive of low voltage 73/23/CEE

Security rules	61010-1
Emission rules	50081-2
Immunity rules	50082-1

*NOTE .- During an electromagnetic disturbance (10V/m) it is permitted a worst case error of 1% of the A/D range. The instrument will recover automatically its functionality when the disturbance stops, without need of the operator to reset or restart.*

Barberà del Vallès October 2009  
Daniel Juncà - Quality Manager

## Precautions on installation



**INSTALLATION PRECAUTIONS.**- The installation and operation of this instrument must be done by qualified operators. This instrument DOES NOT have power switch and will start to operate as soon as the power supply is connected. The instrument has an internal protection fuse, according to IEC-127/2, and is located inside the power-supply connector. The values are

**Fuse 200 mA Time Lag (for 230 Vac power)**  
**Fuse 400 mA Time Lag (for 115 Vac power)**  
**Fuse 350 mA Fast (for 24 Vdc power)**

When the instrument is used to control machines or processes where the personnel or the process can be damaged, the appropriate security elements must be added to the system in order to protect the operator and / or the system.



**SAFETY PRESCRIPTIONS.**- This instrument has been designed and verified according to the UNE-20553 rules and is delivered in perfect conditions of operation. This manual contains the adequate information for the electrical installation. Before starting operations for connections, readjustment, substitution, maintenance, repair, etc, the instrument must be unplugged from the power supply. The instrument must be installed in places with good ventilation to avoid excessive heating, and far from sources of electrical noise or magnetic field generators, such as power relays, electrical motors, speed controls, etc... The instrument can not be installed in open places. Do not use until the installation is finished. The instrument is designed to be mounted on a metallic panel with the adequate protections. DO NOT clean the front lens with abrasive products (such as solvents, alcohol, etc) use a clean and water humid rag. Do not expose the instrument to excessive moisture. DO NOT operate the unit in the presence of flammable gases or fumes.

### EXCITATION VOLTAGE V<sub>exc</sub>.-

Instruments BDF-xx-32 and BDF-xx-36 supply an excitation voltage of 10 to 24 Vdc (50mA) to power transducers, available between terminals A and C. Do NOT connect these terminals to an external power supply, permanent

damages may result on both instruments.



**POWER SUPPLY** .- Connect the Power Supply to the terminals indicated in this manual. Verify that the voltage and frequency of the power supply is according to the voltage and frequency values indicated in the label attached to the unit. DO NOT connect the instrument to power lines which are overloaded, or power lines with loads working in ON/OFF cycles, or with inductive loads.

**SIGNAL WIRING** .- Information to consider relating the wiring of the sensors, probes, transducers, etc. The wires can act as antennas and introduce electrical noise from the environment into the signal wires, specially if the wires are close to noise sources or electromagnetic sources. There are several rules generally known which should be taken into consideration for the wiring :

- a.- DO NOT install impulse, control or signal wires together in the same conduits as the wires connected to power lines, connected to CC or AC engines, electromagnets, ...
- b.- When using shielded wires, connect the shield to the common of the instrument, and leave not-connected the probe side
- c.- The wires of impulse, control and signal should be placed in places far away from switches, transformers, control relays, etc...

### IN CASE OF FIRE

- 1.- Disconnect the unit from the power supply.
- 2.- Give the alarm according to the local rules.
- 3.- Switch off all the air conditioning devices.
- 4.- Attack the fire with carbonic snow, do not use water in any case.



**WARNING :** In closed areas do not use systems with vaporized liquids.

# other products



Panel Meters  
Standard 96x48mm



Panel Meters  
Small 72x36 mm



Panel Meters  
Miniature 48x24 mm



Large Displays  
60 & 100 mm digit



Signal Converters  
& Isolators



Panel Meters  
Standard 96x48mm

## [www.fema.es](http://www.fema.es)

ELECTRONIC INSTRUMENTATION FOR INDUSTRY

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